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POLYMER PRODUCTS DEPARTMENT  
EXPERIMENTAL STATION

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cc: A. J. Dahl - 353  
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Pral File  
I.C.

81C - 1-70

May 19, 1981

TO: DR. Y. L. POWER - PPD, Washington Works  
FROM: S. S. STAFFORD *S. S. Stafford*

ANALYSIS OF BLOOD SAMPLES FOR PERFLUOROOCTANOATE  
(Job No. 810-190; PRAL Nos. 81-1488-1501; Notebook Nos. E22514, E26238)

As requested in your letter of 4/14/81 to L. J. Papa, the 14 blood samples submitted then have been analyzed for perfluorooctanoate (C<sub>8</sub>). Results and sample identification are given in the attached table.

As noted there, the analysis was done using a gas chromatographic method specific for C<sub>8</sub> (Lab Method Number ES-567) but results have been reported as ppm F for comparison with total organic fluorine analyses. Precision is  $\pm 10\%$  relative standard deviation over most of the concentration range, somewhat less at the lowest values. The lower limit for quantitation is 0.007 ppm F (0.01 ppm perfluorooctanoic acid), with a detection limit of  $\sim 0.004$  ppm which can be distinguished from the reagent background but not well quantitated.

Please contact me (772-4440) or L. J. Papa (772-2745) if you have any questions regarding the analyses. General questions on blood sampling can be directed to J. W. Raines or L. F. Percival.

Attachment  
jah

KeyWords:

Perfluorooctanoic Acid  
Perfluorooctanoate  
Blood Analysis  
GC

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TABLE I

CONCENTRATION OF PERFLUOROOCTANOATE IN BLOOD (a)

Sample RAL No.	Date Sampled	P.R.No.	Name	GC Analysis (b)	
				Date Analyzed	[C <sub>8</sub> ], µg F/g blood
81-1488	4/7/81			4/22/81	0.53
81-1489	4/7/81			4/22/81	0.23
81-1490	4/7/81			4/22/81	0.41
81-1491	4/7/81			4/22/81	0.062
81-1492	4/7/81			4/23/81	0.94
81-1493	4/7/81			4/22/81	0.048
81-1494	4/7/81			4/23/81	0.45
81-1495	4/8/81			4/23/81	0.59
81-1496	4/8/81			4/23/81	3.5
81-1497	4/8/81			4/23/81	1.3
81-1498	4/9/81			4/15/81	2.5
81-1499	4/10/81			4/15/81	0.28
81-1500	4/10/81			4/15/81	0.070
81-1501	4/10/81			4/15/81	0.055

(a) Analysis as described in Lab Method ES-567 ("Determination of Perfluorooctanoic Acid in Blood, Gas Chromatographic Method", S. Stafford, 4/3/81), using the packed column GC analysis with perfluoro-n-octanoic acid as calibration standard.

(b) Although the analysis is specifically for perfluorooctanoate (acid or salts), concentrations are given in ppm fluorine for comparison with the results of total organic fluorine analyses. (ppm F = 0.688 x ppm perfluorooctanoic acid) Estimated uncertainty is  $\pm 10\%$  relative standard deviation. The lower limit for quantitation is 0.007 µgF/g. The detection limit is  $\sim 0.004$  µgF/g, but concentrations in that range cannot be well quantitated and are reported as < 0.007. None detected (n.d.) is reported for samples with [C<sub>8</sub>]  $\leq 0.004$  ppm, which cannot be distinguished from reagent background.

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